

## METHODS AND SYSTEMS FOR DETECTING AN OCCLUSION

### BACKGROUND OF THE INVENTION

#### I. Related Application

[001] Under provisions of 35 U.S.C. § 119(e), this Application claims the benefit of U.S. Provisional Application No. 60/533,004, filed December 29, 2003, which is incorporated herein by reference.

#### II. Field of the Invention

[002] The present invention generally relates to detecting an occlusion. More particularly, the present invention relates to detecting an occlusion, and even more particularly, for example, to detecting an occlusion in an ambulatory infusion pump.

#### III. Background Information

[003] Devices, such as ambulatory infusion pumps, may deliver material, such as insulin, through a tube and hollow needle (the infusion set) into a user's body. At times the infusion set may become blocked or "occluded". This situation may result in the user not receiving one or more full doses of insulin. Because it is medically dangerous for a patient not to receive a full dose of medication, this situation needs to be detected and the user needs to be warned when this situation occurs.

[004] With an insulin infusion pump, for example, the force required to deliver the insulin through the infusion set increases when an occlusion is present in the system. Conventional occlusion detection methods look for the force to rise above a predetermined level, or to rise above a predetermined delta added to an initial delivery force. These methods suffer from either not detecting the occlusion early enough or, because they are too sensitive, provide false alarms due to long slow force variations unrelated to an occlusion.